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09/966,288	10/01/2001	Koji Maeda	Q66472	4172

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Washington, DC 20037-3213

EXAMINER

LEO, LEONARD R

ART UNIT	PAPER NUMBER
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3753

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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 09/966,288  
Filing Date: October 01, 2001  
Appellant(s): MAEDA ET AL.

**MAILED**  
**JUN 14 2004**  
**GROUP 3700**

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Jeffrey A. Schmidt  
For Appellants

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**EXAMINER'S ANSWER**

This is in response to the appeal brief filed February 26, 2004.

**(1) *Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

**(2) *Related Appeals and Interferences***

A statement identifying there are no related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) *Status of Claims***

The statement of the status of the claims contained in the brief is correct.

**(4) *Status of Amendments After Final***

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) *Summary of Invention***

The summary of invention contained in the brief is correct.

**(6) *Issues***

The appellant's statement of the issues in the brief is correct.

**(7) *Grouping of Claims***

Appellant's brief includes a statement that claims 1, 7 and 40-42 stand or fall together as a group and claim 39 stands or falls by itself and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

**(8) *Claims Appealed***

The copy of the appealed claims contained in the Appendix to the brief is correct.

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**(9) Prior Art of Record**

6,494,169	TSUBOUCHI ET AL.	12-2002
1,639,091	JOHNSON	8-1927

**(10) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 7 and 39-42 are rejected under 35 U.S.C. 102(b) as being anticipated by Tsubouchi et al (Figure 1). By definition, nozzles comprise divergent cross sections at the outlet side thereof. The nozzles 41-45 in fuel supply plate of chamber 3, inherently each having a divergent cross section is read as “avoiding means” or “avoiding portions.”

**(11) Response to Argument**

In response to appellants’ remarks, the two independent claims 39 and 40 represent separate groupings of claims. Claim 39, which stands by itself includes “means plus function” recitations. On the other hand, claim 40 recites functional language with respect to structures. The functional language in both claims, “for preventing the liquid fuel drops ... from being mixed with each other” is defined in the specification as drops from the nozzles do not mix or combine *along the surface of the fuel supply plate* to form a larger drop. That is to say, the

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avoiding means or avoiding portions do not preclude the mixing or combining of the drops *further downstream within the heat exchanger or anywhere beyond the fuel supply plate*, rather only at the fuel supply plate.

With respect to appellants' perspective on dictionary definitions, a person having ordinary skill in the art of heat exchangers has fundamental knowledge of thermodynamics, fluid dynamics, statics, material science and other college engineering basics. It is, therefore, surprising that one versed in fluid dynamics is unfamiliar with spray nozzles having a diverging outlet portion as evidenced by the spray nozzle 22 of Johnson. See MPEP 2131.01. Thus, Webster's Dictionary does not fully encompass the knowledge of the person having ordinary skill in the art of heat exchange. An engineering dictionary would doubtlessly provide a more adequate technical definition.

With respect to claim 39, the "means plus function" recitations seek to provide patent coverage of all the species in Figures 6-11 as set forth in the Election requirement mailed on October 9, 2002. In the elected species of Figures 6A-B, the "passing means" are holes 61 and the "avoiding means" are chamfers 63 located immediately downstream from respective holes 61. However, "means plus function" recitations are defined by the specification and its equivalents. As disclosed in the specification, the "avoiding means" precludes drops from neighboring nozzle holes 61 from mixing or combining with each other along the plate surface due to surface tension, where drops from neighboring nozzle holes tend to cling to the plate surface and mix or combine into a larger drop. This phenomenon is similar to a bath showerhead. When the water is turned off, residual individual water drops for respective holes or nozzles combine and drip from the showerhead. In Figure 1 of Tsubouda et al., a plurality of

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*spaced apart nozzles 41-45* protrude from a plate defining the atomization chamber 3. Each nozzle corresponds to a single hole in the plate. This physical spacing of the nozzles is analogous to appellants' Figures 9A-B, where a groove 69, essentially a gap between holes 61, functions as "avoiding means."

In order for a nozzle to operate, a difference in pressure occurs on opposite sides of a throat, where the high pressure side forces the fluid through the throat to the low pressure side. The atomization disclosed by Tsubouchi et al. occurs by a large pressure difference and a divergent nozzle design. As evidenced by Johnson, each divergent nozzle 22 of the plate 17 produces atomization. The spray produced by the nozzle of Johnson are composed of "drops," since the spray nozzle by itself does not provide any type of vaporization. The atomization by the divergent nozzle 22 of Johnson projects drops of fluid beyond the apertured supply plate, where mixing or joining of drops may or may not occur *downstream of the plate*. Again, the instant invention seeks to preclude mixing or joining of drops *at the surface of the plate* between respective nozzles.

With respect to claim 40, the functional language of "for preventing the liquid fuel ... from being mixed with each other" cannot be given patentable weight. See MPEP 2114, which states,

**APPARATUS CLAIMS MUST BE STRUCTURALLY DISTINGUISHABLE FROM THE PRIOR ART**

>While features of an apparatus may be recited either structurally or functionally, claims directed to *>an< apparatus must be distinguished from the prior art in terms of structure rather than function.* >In re Schreiber, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997) (The absence of a disclosure in a prior art reference relating to function did not defeat the Board's finding of anticipation of claimed apparatus because the limitations at issue were found to be inherent in the prior art reference); see also In re Swinehart, 439 F.2d 210, 212-13, 169 USPQ 226, 228-29 (CCPA 1971); < In re Danly, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). "[A]pparatus claims cover what a device is, not what a device does."

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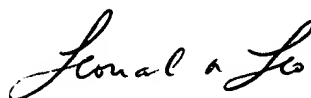
Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990)

The individually spaced apart nozzles 41-45 of Tsubouchi et al. meet the claimed limitations of holes with avoiding portions. Claim 40 does not recite "cylindrical portions" or "chamfers." Aguendo, Johnson provides evidence that divergent nozzles are inherent or prior art structures for the schematically disclosed nozzles of Tsubouchi et al. Tsubouchi et al. (column 2, lines 44-48) discloses "Atomization of the fluid to be heated improves the thermal efficiency of vaporization because the increase of the surface area of the fluid to be heated facilitates vaporization." Johnson (page 2, lines 4-8) discloses the fluid "will be discharged in a spray-like delivery in a diverging spray so as to distribute the [fluid] over a larger area." Thus, the skilled artisan would recognize that the spray nozzle of Johnson is clearly pertinent and inherent prior art to Tsubouchi et al. Again, the spray produced by the nozzle of Johnson are composed of "drops," since the spray nozzle by itself does not provide any type of vaporization.

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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

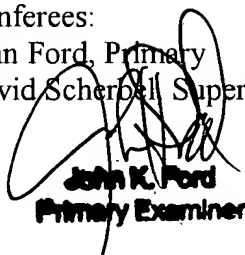


Leonard R. Leo  
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June 9, 2004

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